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One of the most useful reference works for the mathematician is J. C. Poggendorff's *Biographisch-literarisches Handwörterbuch zur Geschichte der exacten Wissenschaften* of which volumes 1–2, covering the literature through 1857, appeared in 1863; the third volume, for the period 1858–1882, edited by B. W. Feddersen and A. J. von Oettingen was published in 1898; and the fourth volume, 1904, edited by Oettingen, 1883–1903. The manuscript of a fifth volume for 1904–1922 is now in course of preparation. Appeal has been made by the editors for information to be sent to them, at the earliest possible moment, addressed: Poggendorff-Büro, Beethovenstrasse 6 (Universitäts-Bibliothek), Leipzig, Germany. The information requested is as follows: surname and first names really used; "consanguineous relations of interest to science"; degrees and when and where obtained; address; year, month, day and place of birth; present and former positions with dates of appointment; "Emeritus? Retired? Since when?" Are you editor of a periodical? instruments invented or special achievements and year of publication or finishing; titles of books published by the author, either alone or in collaboration with other, stating year and place of publication of each work, its size as well as the total number of pages; titles of those articles and papers in the domain of the exact sciences which have appeared in periodicals or proceedings of Societies since 1903,—in each case indicating the periodical, the volume, the year of publication and total number of pages of the article.

ARTICLES IN CURRENT PERIODICALS.

JAHRESBERICHT DER DEUTSCHEN MATHEMATIKER-VEREINIGUNG, volume 30, nos. 9–12, 1921: "Johannes Thomae" by H. Liebmann, 133–144; "Über paraboloidische Flächen" by P. Franck, 145–151; "Das Problem der 36 Offiziere" by H. F. MacNeish, 151–153; "Über stetige Funktionen mit überalldicht divergierender Fourierreihe" by L. Neder, 153–155; "Eine algebraische Behauptung von Gauss. II" by A. Loewy, 155–158; "Das Abelsche Gleichungsproblem bei Euler" by S. Breuer, 158–169; "Über die Hardy-Littlewoodschen Arbeiten zur additiven Zahlentheorie" by E. Landau, 179–185.

JOURNAL OF THE INDIAN MATHEMATICAL SOCIETY, volume 14, February, 1922: "Focus-acnodal cubic" by P. Hemraj, 3–13; "On a particular type of similar triangles" by F. H. V. Gulasekharan, 14–18.

MATHEMATICAL GAZETTE, volume 11, March, 1922: "The structure of the atom" by J. W. Nicholson, 37–42; "Vectors" by C. Godfrey, 43–44—May: "Differential equations in mechanics and in physics" by A. R. Forsyth, 73–81 [Presidential address.]

MATHEMATICS TEACHER, volume 15, March, 1922: "The psychology of the equation" by E. L. Thorndike, 127–136; "Reaction vs. radicalism in the teaching of mathematics" by G. W. Myers, 137–146; "The definition of similarity" by G. W. Evans, 147–151; "The place of elementary calculus in senior high school mathematics" by N. B. Rosenberger, 152–156; "Experimental geometry" by G. A. Harper, 157–163; "How can I bring the soul of mathematics to my pupils?" by A. H. Huntington, 164–171; "Papers by pupils of the plane geometry classes of Fullerton Union High School" by Lena E. Reynold, 172–181; Discussion, 182–184; New books, 185–188; News and notes, 189–190—April: "Functionality in mathematical instruction in schools and colleges" by E. R. Hedrick, 191–207; "Calculus for schools" by W. H. Tyler, 208–211; "The psychology of problem solving" by E. L. Thorndike, 212–227 (to be concluded); "Cultural value of mathematics" by M. G. Kane, 228–236; Discussion, 237–240; News and notes, 241–245; "The Chicago meeting of the National Council of Teachers of Mathematics," 246–251; Research department, 251–252—May: "The psychology of problem solving" (conclusion) by E. L. Thorndike, 253–264; "The teaching of beginning geometry" by A. J. Schwartz, 265–282; "The origin of mathematics—a first lesson in secondary mathematics" by W. Betz, 283–293; "Robert Recorde" by F. Cajori, 294–302; "A list of reference books and magazines for teachers of mathematics" by W. D. Reeve, 303–307; Discussion, News and notes, etc., 307–316.

MATHEMATISCHE ZEITSCHRIFT, volume 12, nos. 3–4, 1922: "Some problems of 'Partitio Numerorum': IV. The singular series in Waring's problem and the value of the number $G(k)$" by G. H. Hardy and J. E. Littlewood, 161–188 (see *1921*, 219); "Über das Wachstum der Potenzreihen in ihrem Konvergenzkreise. I" by O. Töplitz, 189–200; "Zum Waringschen Problem" by E. Landau, 219–247—Volume 13, nos. 1–2, 1922: "Bemerkungen zu einem Satz von J. H. Grace über die Wurzeln algebraischer Gleichungen" by G. Szegö, 28–55; "Neue Lösungen der Einsteinschen Gravitationsgleichungen. A. Das Feld in der Umgebung eines langsam rotierenden kugelähnlichen Körpers von beliebiger Masse in 1. und 2. Annäherung" by R. Bach, 119–133; "Neue Lösungen der Einsteinschen Gravitationsgleichungen. B. Explizite Aufstellung statischer axialsymmetrischer Felder" by R. Bach (Mit einem Zusatz über das statische Zweikörperproblem by H. Weyl), 134–145; "Arithmetical equivalents for a remarkable identity between theta functions" by E. T. Bell, 146–152.

MATHESIS, volume 36, January, 1922: "Préface" by J. Neuberg and A. Mineur, 5–8 ["Il y a quarante et un ans, paraissait le premier numéro d'un modeste recueil mathématique à l'usage des écoles spéciales et des établissements d'instruction moyenne, dirigé par deux anciens élèves de l'École normale des sciences avec la collaboration de plusieurs professeurs belges et étrangers; recueil modeste par le nombre de pages, mais bientôt considérable par le nombre et la valeur des articles publiés. Son programme correspondait essentiellement à la partie élémentaire des mathématiques supérieures et à la partie supérieure des mathématiques élémentaires. . . . Le succès vint rapidement, dépassant les plus belles espérances des fondateurs; d'année en année, les collaborateurs furent plus nombreux; le programme de 1881 s'élargit de manière à comprendre tout l'enseignement mathématique des facultés des sciences et le nombre de pages que l'on avait promis de publier annuellement fut doublé. . . . dans la préface de 1911, l'histoire des trente premières années de *Mathesis* est relatée de cette manière: . . . Cinq ans après avoir écrit ces lignes, les épreuves infligées à la Belgique forcèrent les fondateurs de *Mathesis* à suspendre la publication du journal; . . . *Mathesis* restera fidèle à son passé; elle reprendra la tâche interrompue, contribuer au progrès de l'enseignement des mathématiques."]; "Paul Mansion (1844–1919)" by A. Demoulin, 9–12 [with portrait]; "Géométrie et mécanique" by J. Neuberg, 13–15; "Sur les contacts des sphères tangentes à quatre plans" by V. Thébault, 16–18; "Sur l'inversion et sur une surface cubique à quatre points doubles" by L. Godeaux, 19–23; "Archimède. A propos d'un ouvrage récent" by H. Bosmans, 24–27 [review of P. V. Eecke, *Les Œuvres complètes d'Archimède traduites du Grec en Français avec une Introduction et des Notes* (Paris and Bruxelles, 1921)]—February: "Sur les involutions cubiques *sibi* conjuguées" by C. Servais, 45–49; "Bibliographie du triangle et du tétraèdre" by J. Neuberg, 50–52 (to be continued); "Sur une généralisation d'un théorème de Droz Farny" by R. Goormaghtigh, 52–55; "Analysis situs. Une démonstration du théorème de Petersen" by A. Errera, 56–61—March: "Sur l'hypocycloïde à trois rebroussements" by P. De Lepiney, 77–81; "Relations remarquables entre cinq sphères" by R. Goormaghtigh, 81–86; "Sur les sphères podaires" by C. Servais, 87–89; "À propos d'une construction du point de Feuerbach" by A. M(ineux), 89–94—April: "Bibliographie du triangle et du tétraèdre" (continued) by J. Neuberg, 117–120; "Une surface réglée du huitième ordre" by M. Stuyvaert, 121–124; "Sur l'ellipse et le cercle de Nagel d'un triangle" by J. Neuberg, 125–128 (to be continued); "Formule relative aux combinaisons avec répétition" by M. Sterkens, 129–130—May: "Bibliographie du triangle et du tétraèdre" (continued) by J. Neuberg, 161–164; "Sur l'orthopole et sur la cubique des dix-sept points" by R. Goormaghtigh, 164–166; "Remarques sur l' 'Arithmétique' de Simon Stevin" by H. Bosmans, 167–174 [with facsimile of two pages]; "Sur l'ellipse et le cercle de Nagel d'un triangle" (continued) by J. Neuberg, 175–177; "Calcul d'un emprunt par obligations, avec lots" by M. Sapin, 178–179.

REVUE DE MATHÉMATIQUES SPÉCIALES, volume 32, April, 1922: "Note sur la transformation conforme" by M. Lapointe, 145–146.

REVUE SCIENTIFIQUE, volume 60, April 22, 1922: "Les professeurs de mathématiques du Collège de France: Humbert et Jordan; Roberval et Ramus" by H. Lebesgue, 249–262; "Débat sur la relativité" by M. Gandillot, 262–267 ["AVERTISSEMENT.—Dans ce débat sur la relativité, la théorie d'Einstein est defendue par quatre disciples, *Mathémate, Astronomian, Physician et Logomane*, dont les cultures sont différentes; elle est attaquée par *Quaerens* qui exprime ma propre opinion."].

SCHOOL SCIENCE AND MATHEMATICS, volume 22, May, 1922: "The uses of algebra in study and reading" by E. L. Thorndike and Ella Woodyard, 405–415 (to be continued); "Projective method in mathematics" by B. Cosby, 451–455; "Tangent lines among the Greeks" by F. Cajori, 463–464; "Trigonometry without similar triangles" by J. A. Nyberg, 467–470; "A new ellipsograph?" by J. A. van Groos, 471–472—June: "The uses of algebra in study and reading" by E. L. Thorndike and Ella Woodyard, 514–522; "Graphical trisection of an angle" by E. D. Pickering, 548–549.

SCIENCE, new series, volume 55, May 5, 1922: "The Edward C. Pickering memorial" by S. A. Mitchell, 467–469 [A fund for the Association of Variable Star Observers to be devoted to variable star research]—May 12: "Mathematical publications," 508–509; "The Eliakim Hastings Moore Fund" by A. Dresden, 510—May 26; "The Einstein equations of the solar field from the Newtonian point of view" by L. P. Eisenhart, 570–572.

AMERICAN DOCTORAL DISSERTATIONS.

J. D. BARTER, "The homogeneous vector function and determinants of the P-th class," *University of California Publications in Mathematics*, vol. 1, 1920, pp. 321–343. (University of California, 1917.)

TERESA COHEN, "Investigations on the plane quartic." Pp. 191–211. [Reprinted from *American Journal of Mathematics*, vol. 41, 1919.] (Johns Hopkins University, 1918.)

H. D. FRARY, "The Green's function for a plane contour." Pp. 11–25. [Reprinted from *American Journal of Mathematics*, vol. 42, 1920.] (University of Illinois, 1918.)

K. W. LAMSON, "A general implicit function theorem, with an application to problems of relative minima." Pp. 243–256. [Reprinted from *American Journal of Mathematics*, vol. 42, 1920.] (University of Chicago, 1917.)

FLORA E. LE STOURGEON, "Minima of functions of lines." Pp. 357–383. [Reprinted from *Transactions of the American Mathematical Society*, vol. 21, 1920.] (University of Chicago, 1917.)

WAYNE SENSENIG, "Concerning the invariant theory of involutions of conics." Pp. 111–122. [Reprinted from *American Journal of Mathematics*, vol. 41, 1919.] (University of Pennsylvania, 1919.)

G. W. SMITH, "Nilpotent algebras generated by two units, i and j, such that i^2 is not an independent unit." Pp. 143–164. [Reprinted from *American Journal of Mathematics*, vol. 41, 1919.] (University of Illinois, 1917.)

J. S. TAYLOR, "A set of five postulates for Boolean algebras in terms of the operation exception,'" *University of California Publications in Mathematics*, vol. 1, 1920, pp. 241–248. (University of California, 1918.)

L. E. WEAR, "On self-dual plane curves of the fourth order." Pp. 97–118. [Reprinted from *American Journal of Mathematics*, vol. 42, 1920.] (Johns Hopkins University, 1913.)

PROBLEMS AND SOLUTIONS.

EDITED BY B. F. FINKEL, OTTO DUNKEL, AND H. P. MANNING.

Send all communications about Problems and Solutions to B. F. FINKEL, Springfield, Mo.

PROBLEMS FOR SOLUTION.

[N. B. Problems containing results believed to be new, or extensions of old results, are especially sought. The editorial work would be greatly facilitated if, on sending in problems, proposers would also enclose any solutions or information that will assist the editors in checking the statements. In general, problems in well-known text-books, or results found in readily accessible sources, will not be proposed as problems for solution in the MONTHLY. In so far as possible, however, the editors will be glad to assist members of the Association with their difficulties in the solution of such problems.]

2977. Proposed by FLORENCE P. LEWIS, Goucher College.

A point moves in such a way that its polars with respect to two given conics intersect at right angles. Prove that the locus of this intersection is a rational quartic curve through the circular points, and find its double points.